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THE JOURNAL OF PHILOSOPHY

THE CONTINUITY OF CHANGE. II[1]

THE THEORY OF PERCEPTION

IT IS necessary now to pass to an analysis of percipient events in order that we may indicate the outlines of the "causal theory of perception" which follows from the present scheme. There is a mystery about perception, of course, which is not to be explained away by any "causal" theory of perception, but the alternative to a "causal" theory would be a "miraculous" theory, and this is the death of all explanation. The "mystery," which is acknowledged in the present scheme and would seem to demand acknowledgment from any theory of perception, is the appearance of static phenomenal patterns in the world, whether it be regarded as a world of flux or a world of static particles—electrons, positrons, protons, neutrons, quanta. We may say perhaps merely this: that static phenomenal patterns must be regarded as methods of *approximate information* developed by organisms in their struggle for existence on this planet, and that a necessity for more accurate information would presumably have given rise to more elaborate sensory apparatus and thus more accurately informative sense-patterns.

We shall be concerned, however, not with the history of the development of the receptive nervous mechanism of living organisms, but solely with presentations of sensory content as we experience them and imagine their occurrence in the history of other organisms. These presentations may be analyzed in diverse ways. First of all, the phenomenal pattern presented has at best only a relative simplicity. Retrospective analysis will discover visual components, tactile components, emotional or visual components, etc., and also memory components from *previous* experiences. This method is the analysis of the phenomenal pattern into its qualitative components. (2) There is a hypothetically possible analysis of the modal-pattern of the presentation into its causal constituents. (3) There can be a quantitative whole-and-part analysis of the phenomenal pattern. This gives us a spatial analysis of the phenomenal pattern and an indirect spatial analysis of the presentation itself. (4) In the case of a presentation of a static phenomenal pattern, there is a possible temporal analysis of the presentation.

[1] Continued from preceding issue, No. 23.

It is necessary to point out before a more detailed consideration of these possible analyses that "presentation of phenomenal pattern" does not involve presentation *to* anything. "Presentations of phenomenal pattern" are merely Hume's impressions of sensation and reflection. The account of "personal identity" in the present scheme would be as follows: If there is a set of presentations causally linked to one another such that there is a dominant reiteration of emotional content and likewise an appreciable reiteration of the modal-patterns of previous presentations of other types of phenomenal pattern (memory factors), we have a "staticity" of such a sort that all other constituents of the modal-patterns of the given set of presentations are taken to define a set of experiences "of" that staticity or "individual." We are here merely combining Whitehead's definition of personal order and Hume's analysis of personal identity. The physical body of an organism is merely a complex, sensitive, imperfect staticity which cradles and preserves the personal staticity as the immediate causal environment of that "person."

It must be observed that the modal-patterns of presentations may be constituents in the modal-patterns of both presentational and non-presentational events, and also the modal-patterns of non-presentational events may be constituents in the modal-patterns of either non-presentational or presentational events. It is this provision which assures, on the one hand, the origination of consciousness again after sleep and, on the other, the authenticity of memory. Consciousness, according to the present scheme, is merely a type of presentational event in which there is sufficient complexity in the types of phenomenal pattern presented to assure a contrast of the dominant element and the subordinate elements. If there is no such complexity, there is *mere* presentation of simple pattern, mere "absorption" in it, and no "consciousness of an element." Consciousness of a "self" involves the dominance of the emotional and memory content, as specified above, in reference to contrasting phenomenal patterns of other types. Consciousness of "self as perceiving" involves dominance of a specific phenomenal pattern in contrast with a subordination of the emotional and memory elements defining the self. This might be rephrased as "consciousness of a phenomenal pattern as perceived by a self." The authenticity of memory is assured in the present scheme by the assumption of the subordination of the modal-pattern of the remembered presentation in the events constituting the route between the remembered and remembering events and its dominance in the remembering event. A more detailed consideration of the "origination of consciousness" and "authenticity of memory" must be deferred until the analysis of the modal-pattern of a presentational event into its causal constituents.

With these preliminaries there should be no difficulty in the comprehension of the first type of analysis of a presentational event—the analysis of the phenomenal pattern into its qualitative components. The analysis into the contributions of the five senses is too crude to be exact and exhaustive. There are, for example, kinesthetic and visceral elements to be discriminated, and precise analysis here can be left to the psychologist. It will be assumed in the present account that predominance of one type of component to the exclusion of all other types is possible, that is, one particular presentation may involve merely visual components in its phenomenal pattern. It is furthermore assumed that thought, imagination, memory can not introduce elements diverse in quality from those given in "sense-perception." This is the empiricist bias of the present scheme. A "thought" is a presentation of a phenomenal pattern involving predominantly only visual or auditory components but containing also subordinate emotional components. Thoughts can be predominantly auditory as in music or predominantly visual as in geometry, but thought is nothing more than presentation of phenomenal pattern whether it be "creative" or "reproductive" (appreciative). The components of the phenomenal patterns of all thoughts are taken to be "causal components," that is, they are involved in the causal constituents of the modal-patterns of those thoughts, and these causal constituents are predominantly the modal-patterns of "sensory presentations." "Sensory presentations" will be defined as those in which the dominant constituents of the modal-pattern are the modal-patterns of non-presentational events.

It follows from the above that propositions are simply specific phenomenal patterns—usually a complex visual phenomenal pattern analyzable into competent "symbols" or a complex auditory content or a fusion of the two. "Entertainment of a proposition" is then a simple and unambiguous concept. But if, by a principle of association, presentation of component elements of the proposition involves, as a completing phase, the presentation of other phenomenal patterns, not necessarily of the same type as the propositional pattern, then if there is a fusion, in one complex presentation, of the symbolic propositional pattern and the associated phenomenal patterns, there is a presentation of a "completed" proposition. It is clear that completed propositions may be precise or indefinite according to the character of the phenomenal pattern associated with the initial propositional pattern. Thus "This paper is white" is a propositional pattern which may in specific circumstances enter as a component in a "precise" completed proposition, and "All men are mortal" could be a component only in an "indefinite" completed

proposition. In the light of the above analysis, mere entertainment of a propositional pattern would be a presentation of an incomplete proposition, and it is clear that logic and mathematics are concerned chiefly with incomplete propositions. The error of a rationalistic metaphysics which supposes a geometrical or logical structure to inhere in nature is (1) the error of assuming the elementary propositional symbols to be unambiguously associated with specifiable phenomenal patterns, whether presented in sense-experience or imagination, and (2) the error of believing that such phenomenal patterns can characterize modal-events.

Correlative with the analysis of the phenomenal pattern into its qualitative components is the analysis of the modal-pattern of the presentation into its causal constituents. It is the assumption of this scheme that there is a one-to-one correspondence between these (phenomenal) components and (causal) constituents, that is, each component of the phenomenal pattern may be regarded as the phenomenal pattern of an independent presentation, with a correlated causal constituent of the modal-pattern of the original presentation as its modal-pattern. It is by reason of this fact that the components of phenomenal patterns may be assigned to the activity of specific sense-organs and neural centers. It is also by reason of this fact that realism is preserved in the present scheme. Perception of "objects" involves causal constituents which were previously exemplified "out there" in the absolute, spatially objective past of that presentation.

A type of realism is preserved also by the notion of "abstraction of spatial figure" in perception. The elements of a staticity in nature are causally, and thus temporally, ordered. The temporal order is analyzable within alternative time-systems as noted above. When we attempt to define the ideal of the staticity *at* a durationless instant of time, we derive the correlative abstract ideal of the "spatial figure" of the staticity at that instant. Spatial figure in itself is thus a characteristic of an ideal situation which never obtains in nature.

Spatial figure is, however, a definite characteristic of phenomenal patterns presented in perception. The present scheme will assume that within the absolute past of a presentation of a phenomenal pattern with unambiguous spatial figure there lies an event such that an ideal durationless "slice" of that event is itself characterized by the spatial figure of the phenomenal pattern presented. Thus the same spatial figure can act as a characteristic of the "slice" and as a characteristic of the presented phenomenal pattern. We may say that perceptual activity abstracts and preserves a dominant or "average" spatial figure of the staticities within its own absolute

past and that this abstraction appears as a primary characteristic of the phenomenal pattern of a presentation within the absolute future of that activity. The "averaging-out" and cancelling is accomplished by the coarseness and imperfection of the perceptual apparatus. Thus we see and feel a "book" and not a cloud of atoms, but there is an ideal slice of an event which does possess the spatial figure apprehended in the presented "book," and it is the dominance of this figure within the possible slices of the events constituting the staticity which is the objective basis for the averaging and abstractive work of perceptual activity. We must observe that the notion of "absolute spatial figure" has significance in our scheme, and that of "absolute spatial extension or size" has none. It will be convenient, however, to assume that there is abstraction of "spatial extension" from the more general extensiveness of change or process, but no abstraction of an absolute spatial size. We must conclude then that spatiality, whether by that term we mean merely spatial extension or merely spatial figure, is a product of abstractive perceptual activity and thus has no concrete or independent status in nature.

It is evident that provision has been made in the scheme for the "immortality" of presentations. A set of presentations which constitutes the experience of an individual is a set in which there is a reiteration of the modal-patterns of the presentations of emotional phenomenal patterns and likewise an appreciable reiteration, within each event of the set, of the entire modal-pattern of the event immediately preceding it. These reiterated patterns contribute the memory factors to the phenomenal patterns of the presentation in which they are reiterated. In "sheer" memory these patterns are dominant in the presentation and all other elements are negligible. In vivid sense-perception, on the other hand, the memory factors are negligible. "Sheer" memory, or the perfect repetition of a previous presentation, is an ideal, but it is well known that certain memory experiences are very close approximations to the original, remembered experiences. The present scheme has attempted to account for this phenomenon by the notion of the reiteration of the modal-pattern of the remembered event in all the events of the route connecting the remembered event and the remembering event and the notion of the cancellation of (nearly) all the other components of the modal-pattern of the remembering event.

The origination of consciousness in primitive man, in the child, and in the adult after sleep or anesthesia is one of the recurrent miracles of nature. In the present scheme, in which consciousness is dependent on the structure the phenomenal pattern presented, the miracle is reduced to the appearance of presentational events in

nature. Now it is possible to conceive that spatial patterns may arise in presentations by reason of the inevitable abstractive activity of the perceptual apparatus, but it is clear that abstraction will not account for the presence in a presentation of all the other components of the phenomenal pattern—colors, for instance, or heat and cold. It is by reason of this difficulty that the present scheme must rest content with the assertion (1) that perception of spatial figure is a product merely of abstraction since the spatial figure of the pattern presented did characterize a slice of some event in the actual past of that presentation; and (2) that presentation of all the other characteristics and components of any phenomenal pattern is an undetermined function both of abstraction and supplementation by the perceptual apparatus. This is equivalent to asserting spatial figure to be the only primary quality in nature. The precise determination of the proportion of the abstraction and of supplementation under (2) above rests with the physics, physiology, and theory of knowledge of the future.

We have given an account of two possible types of analysis of a presentational event. The third type of analysis—the whole-and-part analysis of the phenomenal pattern—can best be carried through by observing that the phenomenal pattern can be broken up into "minimal" phenomenal patterns. These are the *minima sensibilia* of Epicurus (*τὸ ἐλάχιστον τὸ ἐν τῇ αἰσθήσει, Letter to Herodotus,* paragraph 58) or the "minima" of Hume (*Treatise of Human Nature,* Bk. I, Part II, Sec. 1). The structure formed by these minimal elements within a static phenomenal pattern is the spatial structure of that pattern. Since this structure is abstracted from a complex event in the past of that presentation, this spatial structure is likewise a characteristic of the "staticity" perceived, and the possibility of analysis of a phenomenal pattern into minimal components is guaranteed by the structural complexity of the events constituting the staticity. By virtue of the correlation of phenomenal pattern and modal-pattern as in analysis of type (2), we can assume each presentation of a minimal phenomenal pattern to be a modal-event, and thus the analysis of the phenomenal pattern of a presentation into its spatial components constitutes an indirect spatial analysis of the presentation itself. It follows from the above that all presentations may be conceived as constituted of these minimal presentations. They are, as it were, the building blocks of our world of experience.

The purely temporal analysis of a presentation—the fourth type—is applicable only to presentations of static phenomenal fields. Any presentation of a static phenomenal field (that in which "no change occurs") can be considered as an event extending over component events "through" which that field endures. "Endurance"

of a static phenomenal field occurs actually in virtue of the reiteration of the modal-pattern of the presentation throughout the events of the route which constitutes the presentation of that field and thus presentation of an enduring (ideally) static phenomenal field not only generates an ideally "pure" spatial structure relating the components of the phenomenal field, but likewise an ideally "pure" temporal structure relating the causally connected components of that presentation or route. We have thus a simultaneous generation of abstract spatial structure (or "frame of reference") and abstract temporal duration. This is the interpretation by the present scheme of Whitehead's contention that space and time are merely abstractions from activity or process.

It is evident now that while presentations of minimal phenomenal patterns constitute the building blocks of our experience it is unnecessary, and indeed impossible, to regard them as atomic, or indivisible. If it is undeniable that quantitative minima occur among the varied types of components of phenomenal patterns, it is equally undeniable that all such minima require finite stretches of time for their presentation. The temporally ordered components of that presentational event are likewise presentations of the same phenomenal pattern, and the fact that phenomenal patterns do "endure" for a finite and measurable time when presented is simply a result of causal determination from "external" events and the activity of the perceptual apparatus. With an alteration in the perceptual apparatus it is conceivable that temporally ordered *components* of the present minimal presentations would be the ultimate "atomic" presentations. Our present minimal presentations, involving minimal yet finite "times," are therefore merely structures of change or activity which act as standards for our measures of quantity and difference. It is by reason of these absolute standards that a pinpoint is tiny, a "twinkling of an eye" is short, and the difference between bluish-green and the nearest distinguishable hue is "negligible." This method of attack is an attempt to avoid the notion of "atomic time" which follows upon the assumption of genuinely atomic events. Since the spatially extensive minima are phenomenal patterns which do not characterize events directly, we have avoided likewise the notion of absolute spatially extensive minima as concrete elements in nature.

It is advisable now to take stock of the general outlines of our scheme and of the consequences which follow from it. (1) Nature is to be regarded as a tremendously diversified, uncompleted event which is not *in* time and space, since these, in their purity, are merely abstractions from the concrete world of process. Questions there-

fore concerning the finitude or infinity of time and space can not be referred to nature itself. The bold statement that time and space as independent structures in nature are "infinite" is not true or false, but meaningless. The same is true, of course, of the statement that space and time are "finite." (2) By the use of the notions of reiteration of modal-pattern and superposition of such patterns, uniqueness of the modes has been preserved, and this guarantees a genuine novelty in our world of activity. It is this which keeps the nonpluralism of the present scheme from becoming a monism in the traditional sense. Our world is essentially unfinished, essentially dynamic, and yet essentially *one*. (3) By the use of the relation of extension and the notion of active patterns which may be reiterated there has been a guarantee of the *continuity of change and becoming*. This, of course, is merely a reassertion of the unity of nature. (4) Complexity has been introduced into the present scheme, not by the multiplication of categories or of types of entities, but by a provision for a complexity and variation of almost infinite scope within the two fundamental types of modes —the presentational and non-presentational.

The aim of this paper has been to present and defend the consistency of the delineated scheme as a possible cosmology, but I propose to test its adequacy by application to a limited number of the traditional philosophic problems. The phenomenalism of the present scheme is fundamental in the discussion of all these problems. There is presumably a continuity between the two types of modes, but a borderline or hybrid type is not to be discovered by creatures dowered with our perceptual apparatus. There are, nevertheless, certain emotional experiences in which the phenomenal patterns presented are so vague and volatile, so inconstant and continuous, that they seem to be but imperfectly lifted out of the flux of the event in which they are embedded. It is indeed from such volatile phenomenal patterns that we receive our most reliable information concerning the character of the modal-patterns in nature. Visual patterns are customarily describable in terms of the *motion of objects,* and this type of change is clearly specious in its claim to represent genuine activity. Other types of memory pattern vary widely within the extremes of sheer staticity and discreteness of visual phenomenal pattern on the one hand and the volatility and continuity of emotional phenomenal pattern on the other.

It follows from the present scheme that causality is not to be analyzed or understood in terms of phenomenal patterns alone. This has been the experience of philosophers from Hume to the neopositivists. The result of the failure of the positivists has been their assertion that causality is merely a type of relation between phe-

nomena which obtains whenever there is a sufficient number of recurrences of a given sequence of phenomena. The sequence, of course, must satisfy certain conditions of spatial and temporal contiguity. The precise determination of the "sufficient number of occurrences" lends through Mill to the latest reaches of probability theory. This failure of the positivist to understand or analyze causality becomes for him an achievement, and he asks for evidence within the phenomenal sphere that causality is anything but a recurrent sequence of phenomena. It must be admitted that within the phenomenal field there is none of the continuity of cause and effect or "production" of the one by the other which characterizes genuine causality. How, as Hume rightly asks, could the motion of a billiard ball—an object—*produce* the motion of another? A moving billiard ball as given in perception suffers no essential change. Therefore, how could it *effect* a change in another? We may say that the *motion* of the one ball produces a motion of the other. If the balls suffer no change in motion, however, then motion is an accident of their nature, and a causality between accidents is hardly the full-bodied causality we are looking for.

We must agree that phenomenal causality is merely a causality of sequence, of contiguity rather than continuity, a causality in which the temporally ordered "phenomenal events" are genuinely discrete and discontinuous. The event which we call the "motion of one ball" is easily distinguished from the "collision" and the "rebound." The only continuity we assume is the continuity of the *continuing* balls and the continuity of the space and time *in* which the events occur. The events themselves are accidental adventures of the objects involved, and therefore can not merge or produce.[2]

> ergo praeter inane et corpora tertia per se
> nulla potest rerum in numero natura relinqui . . .
> Nam quaecumque cluent, aut his coniuncta duabus
> rebus ea invenies aut horum eventa videbis.

Phenomenal events are discrete by reason of the inevitable action of perceptual activity in eliciting presentations in which change is most easily interpretable in terms of the adventures of objects. There is presumably a temporal discreteness between all or most presentations, a discreteness introduced by the mechanism of perceptual activity, but appearance of objects in the phenomenal field generates immediately a causality of sequence between the adventures of those objects.

It follows that all verifiable laws of nature must be expressed in terms of identifiable sequences of phenomena (phenomenal events).

[2] Lucretius uses *eventum* consistently in this sense. Cf. *De Rerum Natura*, Bk. I, 11, 445–446, 449–450:

To set up proportions or geometrical structures as "laws of nature" is simply a betrayal to an uncritical rationalism. All "causal laws" are of the form: if this, then that. We can now agree with the positivistic criticism of chance as a positive fact in nature by observing that "chance" can mean only the occurrence of a phenomenon in a novel sequence, that is, in a sequence which has not appeared in the previous experience of the percipient. Chance, therefore, is relative, not absolute, depending first of all on the percipient's fund of knowledge of previous occurrences of the sequences within which the "chance phenomenon" appeared, and secondly on the degree to which we refine our analysis of the phenomenon itself. We may be able to assert, for instance, that there is a "causal law" relating sun-spot activity and business cycles, but the establishment of a correlation between the *details* of the two phenomena is still imperfect, and we must assert that *on this level of analysis* there is no causal law operating. This relativity of all causality of sequence and its correlated contingency of sequence is compatible, nevertheless, with the basic causality which we have identified with the "continuity of change" and which is represented and secured in the present scheme by the continuity of extension of one event over another and the possibility of reiteration and integration of modal-patterns.

It is a consequence of the phenomenalism of the present scheme that the laws of this fundamental causality are never apprehended in experience, since they would need to be expressed in terms of modal-patterns rather than phenomenal patterns. It is for this reason that any phenomenal law of nature, expressing a verifiable causality of sequence, is merely an approximation to the complex modal-pattern which defines the character of the activity that is our world. The nearness or success of the approximation is dependent on its usefulness in practice with respect to a given end. The divergence between the two types of causality is illustrated in the fact that any element of the modal-pattern of an event is a causal constituent which characterized some previous event, while there are many phenomenal patterns which fall under no law of phenomenal sequence. Decisions or feelings of choice are such phenomenal patterns. The result has been, as Kant pointed out, that men will always attempt to place phenomena within recurring sequences and consider them as governed by laws of nature and yet they will always act as if *they* were free from these laws. By reason of the complexity of the factors leading to an experience of decision and the imperfect representation of these factors within the phenomenal field of the experient, it is clearly impossible for any individual to regard an experience of decision as a member of a

recurring sequence of phenomena defining a law of nature. It is for this reason that men will always be free from *any* phenomenal law of nature. If the present scheme be correct, however, each of their experiences has its causal constituents, linking that experience with presentational and non-presentational events in its absolute past. Such linkage can not be predicted, since prediction takes place within the phenomenal field.

There are certain emotional experiences, however, both esthetic and religious, in which this continuity and fluidity of transition is most clearly apprehended. The poets, musicians, and mystics are continually rediscovering this fact.[3] The recognition and acceptance of this linkage or dependence is the core of all religion. In a "religion of healthy-mindedness," to use James's term, there is a joyful acceptance of, and faith in, this dependence. In a religion of despair there is still the recognition of this dependence, but with fear rather than trust, patience rather than hope. We have used the term "mode" in the present scheme to indicate that the fundamental elements, events, are to be taken as manifestations or determinations of God's nature, with respectful allusion to Spinoza's own use of the term. "Change" now displaces Spinoza's "substance" as a fundamental category. Moments of religious experience are modes in which the linkage of that mode with modes beyond it is clearly intuited; in which the unity or continuity of nature is most clearly revealed; in which, in short, the actual structure of nature is presented. In such moments there is recognition that phenomenal freedom with respect to relative laws of nature must be renounced in favor of this dependence on God's nature. Perfection and depth of experience are impossible without this recognition.

If we add now to our present account the assumption, guaranteed by Dewey and Santayana, that all activity is ultimately *for the sake of* esthetic experience, we must add to our moment of religious experience factors of esthetic satisfaction (in the widest sense) for the achievement of the highest perfection of experience. There must be an intuition of the *beauty* of holiness. It is the intuition of the "holiness of beauty" which leads poets and artists from another direction to this same type of experience. This perfection of experience is, in default of better evidence, the "end" of all existence, the ethical "good" of the present scheme.

The nature of the reinterpretation of traditional philosophic

[3] The following quotation from a contemporary novel will illustrate my point: "Beneath the impact of a work of art, he said, we undergo a kind of conversion. Our stiffness breaks, we flow again; we are aware, as at no other time, of a continuity in ourselves, as though we were given eyes to look up and down the river far beyond the little section of it that is our life in this world." Charles Morgan, *Sparkenbroke*, New York, 1936, p. 71.

concepts demanded by the present scheme is, I trust, clear after the foregoing discussion. My intention in presenting this abstract of the scheme will have been achieved if I have shown its self-consistency as a cosmological outlook and indicated, however briefly, its power and adequacy in the solution of certain traditional and contemporary cosmological problems.

C. HILLIS KAISER.

EDON, OHIO.

A PROBLEM IN PHILOSOPHY

A TREATMENT OF SOME OF THE DIFFICULTIES RAISED BY ZENO'S PARADOXES OF MOTION

ZENO'S well-known paradoxes of motion have had a marked influence on philosophic thought even down to the present day. Although the conclusions he drew from them are now relatively unimportant, his treatment of the problem involved has led many people to conclude that change of any kind can not be continuous, but must occur in "atoms"—either a finite amount coming all at once, or none at all. They argue that in order to achieve a finite amount of change, if change is continuous and therefore infinitely divisible, an infinite series of intermediate positions must be disposed of by counting out its terms in succession—obviously an impossibility, they continue, since infinity is defined as that which exceeds finite count.

It should be noted, however, that the science of mathematics shows the product of zero and infinity to be indeterminate, and not necessarily zero; for infinity is approached as a limit, and is not a number. Therefore this product must be evaluated by observing the variables involved in the particular case. Thus if x approaches zero as y approaches infinity, their product xy may approach zero, may remain or may approach a constant, or may approach infinity, depending on the nature of the two variables. Specifically, then, we can not say that it is impossible to produce a finite amount of change by adding dimensionless "points" in succession, if they be added in numbers exceeding finite count.

William James subscribes to the "atomic theory" described. He decides[1] that any change, motion, or growth must take place by discrete increments, either a finite amount appearing or none at all.

[1] *Some Problems of Philosophy*, chaps. X and XI. This reference and those which succeed it should be followed up in order to appreciate the points involved, since it is difficult for one man to do justice to the arguments of another in summarizing them.

Apparently the change may be infinitely divisible once it has occurred, but not while it is under way; for if it is, he says, then "before an end can be reached, an endless succession of terms must be successively counted out; hence the objections of Zeno and Kant hold."

A. N. Whitehead[2] treats the subject much more peremptorily, proceeding at once to say that the true difficulty is to see how the arrow survives the lapse of time, and announcing that the introduction of motion brings in irrelevant details. He agrees with James in substance, feeling that a valid argument remains even though James does not allow enough for those elements in Zeno's paradoxes produced by inadequate mathematical knowledge. "For," he says, "what becomes has duration. But no duration can become until a smaller duration (part of the former) has antecedently come into being. . . . The same argument applies to this smaller duration, and so on. Also the infinite regress of these durations converges on nothing—and even to the Aristotelian view there is no first moment. Accordingly time would be an irrational notion."[3] He therefore concludes that time is atomic, epochal, a succession of elements.

Probably he does not intend to deny that, for similar reasons, other forms of change must also be "atomic"—for example, motion. At any rate, motion gives us a convenient approach to the matter, as it did Zeno. One object is said to be moving with respect to another when the distance between a given point on the former and a given point on the latter is changing.

Before going further, however, it may be advisable to review one of Zeno's paradoxes. Since it does not matter whether we choose "The Arrow" or "Achilles and the Tortoise," let us take the latter. A race is arranged; the tortoise, which travels at half Achilles' speed, is given a handicap of (say) one inch. At what point will Achilles overtake his competitor? When he moves one inch, the tortoise has moved ahead half an inch; when Achilles moves this half inch, the other is one quarter of an inch ahead; and so in infinite regression. The distance between them is thus a diminishing series; measured in inches it is 1, ½, ¼, ⅛, 1/16, 1/32. . . . It approaches zero, but never reaches it in any finite number of terms, and therefore Achilles never overtakes the tortoise.

The real problem, of course, is to have either contestant move at all; it is immaterial whether we consider Achilles to be moving with respect to the tortoise or with respect to the ground. Before any finite distance can be traversed, an infinity of positions must be held

[2] *Process and Reality*, part II, chap. II, sec. II; also *Science and the Modern World*, chap. VII.

[3] *Science and the Modern World*, chap. VII.

successively; but this appears impossible since the end of an infinite series can not be reached by counting out its terms in succession.

Assume that time is "atomic." As Achilles moves across the ground, let us suppose that Δs (read "increment of s") is the "atom" of change of distance, and let it approach zero. (This is essentially what was done by the others in treating the problem; infinitely divisible change is when Δs equals zero.) Also, let us call the time consumed in this element of change Δt. Now as Δs approaches zero, the number of atoms of change that must take place in the traversal of a given finite path approaches infinity. Here is where our predecessors got into trouble. But note that, as Δs approaches zero, so does Δt; that is, as the number of "atoms" of change approaches infinity, the number occurring per unit of time also approaches infinity. Therefore, although Achilles must hold an infinity of positions in order to reach his goal, he holds an infinity of positions per unit of time. This, however, was ignored in previous treatments. A reference to them will show that they unwarrantably and probably unconsciously assumed that a finite period, however small, must be spent in each position; or, what amounts to the same thing, that only a finite number of positions could be held per unit of time.

It is probably an unnecessary precaution to point out that one must not be surprised at one's inability to deduce how far Achilles travels per unit of time, from the fact that he passes through an infinity of positions per unit of time. Achilles, the tortoise, and the arrow will behave according to the laws of physics, and in any given time they will travel those distances their speeds would lead us to expect.

Such a treatment of the problem allows Achilles to overtake the tortoise, and allows the arrow to reach its goal, without causing change to occur in discrete increments or "atoms." As this notion is therefore unnecessary, we may apply Occam's Razor to it. It must be borne in mind, however, that, even though an "unnecessary" part of a theory be removed by this instrument, it may in reality be among the true facts.

When it is realized that this solution consists of showing that, though change is considered as infinitely divisible at all times, it is not to be thought of as the addition of individual dimensionless "points" into an ultimate entity possessing dimension, but as the continuous addition of them in numbers exceeding finite count, it will be seen that the argument applies to time itself as well as to other forms of change. However, it is usually easier to interpret one type of change in terms of another, so let us take an arbitrarily selected motion as a standard, and consider the passage of time in

terms of this motion. Further, let us conceive of time as a path, and the present moment as a point moving along the path. Thus, if the present moment passes through one second while a point executing our standard motion passes through one foot, time may be said to be occurring at the rate of one second per foot. It is to be hoped that it is not doing Whitehead's argument too great an injustice to say that it consists of showing that there are the same difficulties in the way of the present moment traversing a given period of time, as are in the way of Achilles overtaking the tortoise. Before the present moment can traverse the whole period, it must traverse a smaller period (part of the former); the same argument applies to the smaller period, and so in infinite regression. (Compare with the quotation from Whitehead given above.) In other words, the "atom" of change of time is allowed to approach zero, and it is shown that the number of positions that the present moment must occupy successively, in order to traverse a finite period of time, becomes infinite; then, since infinity can not be reached by the addition of finite terms, it is deduced that the present moment can not traverse any finite period of time under the given conditions; so it is concluded that time is "atomic" or epochal.

Remember now that we are thinking of time in terms of a standard motion. If the atom of change of time, Δt, approaches zero, so does Δm, the distance the reference point moves during the atom of change of time. That is, as the number of positions the present moment must successively occupy becomes infinite, so does the number of positions it occupies per unit movement of the reference point. It is therefore not a question of adding dimensionless "points" of time in finite numbers in the vain hope of eventually traversing a dimensioned path, but of adding them continuously in numbers exceeding finite count; thus can an infinity of successive terms be dealt with.

A. N. McLeod.

Ottawa, Ontario.

BOOK REVIEWS

The Conception of God in the Philosophy of Aquinas. Robert Leet Patterson. London: George Allen & Unwin, Ltd. 1933. Pp. 508. 21s.

The task of expounding the doctrine of a philosopher is undertaken usually for either scholarly or philosophic reasons, with intent to restate what the philosopher said and to indicate under what circumstances and why, or with intent to estimate the truth or falsity, the adequacy or inadequacy of his doctrines; the second, to be ac-

complished successfully, presupposes the prior accomplishment of the first. Dr. Patterson has set himself the task of studying, in the second manner, the various statements collected from the works of Aquinas which express his doctrine concerning the knowledge of God attainable by human reason without the aid of revelation. The results are drastic: among numerous other corrections and criticisms, the five proofs of the existence of God are reduced to two or possibly one (the first three are not genuinely distinct and the last two are special applications of the same principle that underlies the first three (p. 9), yet the fourth is "a genuinely distinct proof in itself" (p. 90) because it applies that principle with reference to a unique class of facts); Aquinas's distinction between knowledge *that* God is and *what* God is is pronounced illegitimate as is his distinction between God and the Universe (pp. 9, 185); his doctrine of degrees of being requires more critical treatment (pp. 9–10, 186, 249ff), his attempt to harmonize the Aristotelian and Christian conceptions of God breaks down (pp. 10, 291), and his distinction between "real relations" and "relations of reason" is indefensible (pp. 10, 296).

Although a great part of his book is devoted to paraphrasing and quoting Aquinas's conclusions, arguments, and even Aquinas's refutations of objections, Dr. Patterson shows little concern to make the meanings he gives to terms conform to the usage of Aquinas even when he gives evidence elsewhere in the text that he is not unacquainted with that usage; indeed the meanings which Dr. Patterson gives terms are frequently at variance not only with the usage of Aquinas but with all the more familiar current usages. Consequently, although he professes an admiration for Aquinas commensurate with the labor he has expended on him, Dr. Patterson reports from the writings of the Angelic Doctor a series of inconsistencies, oversights, and errors which a tyro in philosophy should have observed and avoided. Thus a long chapter (pp. 55–98) is devoted to the criticism of Aquinas's proofs of the existence of God, in which the basic motif is that proofs which Aquinas seems to have considered different are, to use one of Dr. Patterson's favorite phrases (cf. pp. 66, 239 and *passim*), "practically identical." These proofs, Dr. Patterson assures us, are *a priori,* although he adds that in the meaning which tradition gives to the term they are *a posteriori,* that is, they proceed from effects to cause. But this "holds good only of the conclusions of the respective arguments not of the arguments themselves" (p. 55). The arguments are *a priori,* according to Dr. Patterson, because they depend on the principle of causality, which is an *a priori* principle. The first three arguments would be valid if only one instance of motion, causation, or contingency were adduced respectively for each; therefore. Dr. Patterson argues, they

are not inductive, since induction depends on an enumeration of instances, and the "principle of induction" which he invokes seems to require that the proof is more cogent the greater the number of instances adduced (p. 56). Since *a posteriori* proof is apparently inductive in this very narrow sense, all modes of logical implication would seem to be *a priori;* in any case, Aquinas's method in the proofs "is simply the ordinary *a priori* method of logical implication" (p. 96). The first three arguments are identical because the series of movers and things moved, the chain of cause and effect and the realm of contingency are identical (p. 72)—i.e., apparently because all three arguments take their point of departure from the contingent world of experience which involves motion and causes—and because the entity whose existence they prove is one and the same entity (p. 80)—i.e., apparently because they are all proofs of the existence of the same God. Scholars who suggest that the arguments differ because each starts from a different order of effects and consequently throws light on a different aspect of divine causality, are brushed aside, yet when all the labor of reducing the proofs is completed and Dr. Patterson has gone on to further problems he is content to announce that "each [proof], beginning as it does by considering his effects from a unique standpoint, ends by attaching to him some further predication" (p. 109), which is precisely the sense in which the critics whom he purported to refute maintained that the proofs were distinct.

It would be endless to go into the minutiae of the arguments by which Dr. Patterson seeks to establish his points or to show the countersenses which appear at each turn in his interpretation of the Thomistic and Aristotelian terminology. "Physical motion" he seems to identify with local motion (cf. p. 57 where he points out that "physical motion" and qualitative alteration both come under the head of motion); motion he tells us is equivalent to change according to Aquinas (pp. 66, 68) or identical with change (p. 71) and movement includes every form of change (p. 116), which is incorrect in the language of Aristotle or Aquinas, for although motion is "essentially" change, and all motions are changes, all changes are not motions (as all animals are not men), generation and corruption being instances of changes which are not motions; he rightly discerns that the priority involved in the argument against infinite regress is not a temporal priority and therefore concludes it must be a "logical priority" (p. 60) ignoring the four types of priority which Aristotle or Thomas might have suggested for priorities which are not temporal, and to make it worse, this "logical priority" is apparently also an "ontological priority" (p. 79). Even more crucial, the reduction of the arguments depends on the

contention that at least four of them are built on the principle of causality, which reposes on the principle of sufficient reason (p. 55). Much later and in a different connection the reader is warned that Aristotle and Aquinas adhere to the doctrine of the four causes. Dr. Patterson does not return to consider the effect of such multiplicity on the simplicity of his "principle of causality," and indeed it would probably have none, for his statement of the four causes displays a gallant disregard of the niceties of the Aristotelian analysis (p. 165). The material cause of an object is "the matter out of which it was composed"; the formal cause is "the form or essence which was impressed upon the matter, and which imparted to it its characteristic nature, its array of qualities"; the efficient cause is "in an artificial object, its human designer, in a natural object, God"; the final cause is "the end or purpose for which an object was called into being." But then Dr. Patterson is fond of speaking of the "material universe" (as p. 131), and he considers "violent motion" strange phraseology (p. 141), notwithstanding that his philosopher is an Aristotelian.

Dr. Patterson has expended great pains and logical acumen on his task and he has in many places succeeded in uncovering the thread of meaning in arguments which are frequently misunderstood; if he had pushed his labors a little further and had been content to follow the meanings which Aquinas gives to his terms, he might have found fewer errors and inconsistencies in the works of that philosopher, or at least he might have located the point of his difference from Aquinas more surely.

R. McK.

Locke and Scepticism. ALBERT HOFSTADTER. New York: Privately printed. 1935. For sale at the Journal of Philosophy. ii + 134 pp. $1.00.

This doctoral dissertation is a painstaking and thorough analysis of the elements in Locke's theory of knowledge which eventuated in his scepticism. Its chief thesis could be summed up by saying that while Locke's theory of nature shows how the mind comes to be furnished with its ideas and consequent knowledge, his theory of knowledge would never enable the mind to discover the realm of nature or establish the truth of any theory about nature. "Though the *Essay* itself, by its original set-up, can explain ontologically the fact that ideas and ideal contents in the mind can and do have realities outside it answering to them, a mind which is put into the position described by the Essay cannot know this. And if it still be affirmed that a mind can know the reality of its knowledge, it is thereby implied that the *Essay,* which implies the opposite, is false" (p. 110).

Mr. Hofstadter recognizes that there is a frequent emphasis by Locke on "the experimental nature of knowledge." But it is his purpose rather to exploit the other elements in Locke and to reveal the sceptical outcome of these other elements. So he begins with a chapter on Nature, which explains Locke's "substrational view of substance" and the resulting difficulties in the accounts Locke gives of qualities, relations, and other basic concepts. A chapter on Mind reveals the difficulties which ensue when minds are treated as "substances" in Locke's sense and shows clearly that Locke never came to any one conclusion about the relation of mind and body. A chapter on Ideas deals with Locke's distinction between simple and complex ideas as a distinction between ideas-as-given and ideas-as-taken (or, it might be said, between ideas-as-subject-matter and ideas-as-operational-tools). The longest chapter, that on Knowledge, shows how Locke can handle, in terms of his theory of knowledge, all the types of knowledge he distinguishes except sensitive knowledge of external reality. In endeavoring to present a case for such knowledge, it is pointed out, Locke insensibly transformed the idea-as-given from a mere appearance which had to wait for the mind to act upon it in order to give rise to knowledge, into a presentation which carries already within it its own little bundle of knowledge, knowledge, namely, that there is something existing beyond itself which has caused it and of which it can serve as representative. But this little bundle of knowledge can hardly be subsumed under the definition of knowledge which the Essay explicitly lays down. A final chapter on Words rather repeats than develops the rest of the analysis,—which should be expected of a topic which, however brilliantly Locke treated it, remains apart from the integral developments of the rest of the *Essay*. The conclusion of this chapter parallels the general thesis of the entire book: "One can not expect to explain communication on the basis of a theory of mind which initially prevents minds from coming into contact" (p. 133).

S. P. L.

Essais. EMILE MEYERSON. Paris: J. Vrin. 1936. xvi + 273 pp. 32 francs.

This collection of essays presents to the public a number of papers which first appeared some years ago and are hence difficult of access, as well as five studies in the philosophy of science which were published after his death in various philosophical journals. Among the former are four papers on the history of science, three of which are of primary importance in establishing priority in certain scientific discoveries. The group of posthumous papers will probably prove of greatest interest to readers of this JOURNAL.

They are attempts on the part of their author to clarify obscurities and to answer objections made by his critics. Thus he attempts to make more precise the differences between the philosophy of nature and what he called the "philosophie de l'intellect"; he gives us a defense of his analytical and historical method; he makes more precise his theory of the relation between mathematics and the world of experience; he tries to establish more fully the similarity between knowledge and common sense in their common use of the notion of "things"; he answers criticisms of his central doctrine of identification.

Though a thinker whose expository gifts were perhaps unequalled, Meyerson was a man who, it is only just to say, was resentful of criticism and hence failed to see the point when others suggested weaknesses in his theories. Thus (p. 198) he represents M. Parodi as maintaining the incredible thesis that reasoning by asymmetrical transitive relations "joue, dans le cheminement de la pensée, un rôle plus considérable que celle de l'égal." When one turns to Parodi to find out exactly what he said, one finds that he has maintained—what the writer of this review also once had the misfortune to maintain—that such reasoning is not a form of identification. Again (p. 207) an unnamed critic—*favorisé en l'occasion par sa qualité d'étranger et une entente imparfaite du français*—is accused of having wished by means of symbolic logic to reduce all forms of identification to one. Now two things are certain: (1) that only a freshman would ever think of logistic as a substitute for an *ars inveniendi*—have we not heard an incessant clamor that all logistic is tautological?—and hence need not occupy the attention of a man like Meyerson; (2) that if identification is the supreme form of thinking, there would be no problem of any degree of difficulty in representing that form in logistic symbols.

Because of this attitude the great weaknesses of Meyerson's thinking were never corrected. They were and remain its incapacity for absorbing reasoning which all of us use which by its very nature could not be turned into a *cascade d'équations,* and second, its inability to interpret that part of statistics which deals with curves and their direction. Parodi's case remains unanswered because misunderstood; the nearest approach to an interpretation of the other occurs in Meyerson's treatment of the second law of thermodynamics, in which he expresses the uneasiness which it continues to stimulate in the breast of scientists.

It is perhaps superfluous to add that these strictures do not concern the historical portions of Meyerson's work, which remains a magnificent contribution to our knowledge of the workings of the human mind. His erudition was, of course, unexcelled and he had

a gift of exposition which had few rivals. Had he combined that with a measure of self-criticism, his contribution to the philosophy of science would have been as great as those to its history.

G. B.

Critica dell' idealismo. CARMELO OTTAVIANO. (Collezione di Studi Filosofici, Serie Teoretica, N. 8.) Napoli: Alfredo Rondinella. 1936. 194 pp. 12 l.

Italian philosophy in the twentieth century has been mainly identified with neo-idealism, and more specifically with its major exponents, Croce and Gentile. However, within the last decade or so, a new group of philosophic pioneers has been simmering in Italy with a purpose similar to the somewhat earlier Anglo-Saxon realisms, namely, to clear the ground of its idealistic weeds so as to make the land of philosophy more traversable. The leader of this realistic movement in Italy is Orestano, the teacher of the author of the above book.

Professor Ottaviano writes primarily a criticism of the epistemology of idealism. He has patiently managed to collect the major arguments of his school against the idealists from Berkeley to Gentile. His method of procedure is to demonstrate that a successful disproof of idealism implies a successful proof of realism.

The author attacks "the doctrine of immanence" as epistemological idealism by showing how absurd or invalid its consequences or implications are. By way of summarizing his lengthy analysis, the reviewer shall present four idealistic propositions as test cases for the specific arguments introduced.

The proposition—The world is *idea*—implies absolute scepticism because it denies the independent existence or subsistence of the external world. Idealism, motivated by what the author calls a "fantastic psychology" ("literary psychology" as Mr. Santayana puts it), reduces the objective or external world to an idea or modification or creation of the conscious subject or knower. *Esse est percipi.* In short, idealism by making the cognitive relation immanent or internal denies the very possibility of knowledge because knowing is in its nature self-transcendent or external, that is, implies a realistic epistemology. Professor Ottaviano further shows that absolute scepticism is logically untenable and would force idealism to die by its own sword.

The proposition—The world is *my* idea—leads to solipsism or "the individuality of the world of immanence." The author points out that the existence of a single individual is only intelligible if other individuals exist. The isolated individual is but a "psychological fiction" of idealistic heads. Furthermore, he adds, the

fact that I am immediately aware of myself does not falsify the equally evident fact that I am immediately aware of others.

The proposition—The world is my *present* idea—implies what the author calls "punctualism" ("supersolipsism" as Professor Montague puts it). A past or future object of thought, according to idealism, is conceivable only as the present creation of the activity of thinking. Only the present "act" actually exists. Thus, punctualism negates all temporal concepts, history, the evolution and enrichment of the spirit. "The becoming of the idealistic dialectic is a fictitious becoming, as the painted fire is a fictitious fire and the painted stream is a fictitious stream." The author also concludes that the idealistic theory in denying the possibility of progress "leads inevitably to the most mortifying materialism."

The proposition—*This* world is my present idea—implies an "intrinsic determinism" because "the thisness" of my objects of thought is internally determined by the categories of consciousness. The latter produce not any world but this world. This fact, says the author, is a mystery from an idealistic standpoint. Why "this" world? Unless the universe exhibited some permanent and independent structure, its creation by consciousness would be purely contingent, he argues. In short, pure idealism as the philosophy of the indeterminate surreptitiously shifts to a realistic basis when it claims "to create" or know this determinate world structure. Thus, Professor Ottaviano seems to suggest that pure idealism is identical with mysticism as the doctrine of the primordial and indeterminate one.

PASQUALE ROMANELLI.

BROOKLYN COLLEGE.

Les mathématiques et la réalité. Essai sur la méthode axiomatique. FERDINAND GONSETH. Paris: Félix Alcan. 1936. Pp. xi + 386. 30 fr.

This is Professor Gonseth's second book on the philosophy of mathematics. His earlier *Les fondements des mathématiques* was devoted chiefly to an exposition of mathematical doctrines and schools of thought significant in contemporary discussions. The reconciliation between these schools which he there attempted implicitly is developed dialectically in the present volume. The central problem considered is the relation of the formal and the concrete; and the central thesis is that mathematical and logical forms are derived by abstraction from, and are schematizations of, the concrete intuitive material of daily practise at various levels of generality. Hence it is claimed that these forms do not constitute an autonomous, completed realm of truths; and that our *conception*

of the concrete is an intellectual construction in terms of such progressively elaborated system of forms, which, moreover, bears the stamp of certain schematic categories of our understanding. It is integral to Professor Gonseth's views that mathematical and logical ideas are to be understood only in terms of their *genesis*, so that his doctrines are in essence only slight variations upon the neo-Kantianism to be found in the writings of Brunschvicg.

A part of the discussion is carried on in dialogue form between *Sceptique*, a dogmatic "hard-headed" empiricist; *Parfait*, an absolutistic Platonist professing an eternal and autonomous realm of forms; and *Idoine*, the author's mouthpiece, who is a pragmatic middle-of-the-roader, accepting common sense and "intuitive" knowledge wherever these are adequate, but rejecting finalism and indubitability on principle. With *Sceptique* and *Parfait* as foils, Professor Gonseth makes short shrift with sensationalistic atomism and an antecedent realm of pure logic in terms of which mathematical entities are to be implicitly defined. He characterizes mathematical truths as refined common-sense *aperçus*, abstract with respect to their intuitive content though concrete with respect to further refinements, but never free from a background of intuitive material. Indeed, logic itself is argued to be an elementary natural science, its principles being schematizations of laws of objects. The rôle of language in the "construction of reality" is fully recognized, since all explanations in the positive sciences are found to consist in substituting for the explicandum objects which are better known and more easily controlled, i.e., a system of symbols. An equally important rôle is assigned to "analogy," the search for structural identities between symbolic systems and their referents. Causality, like analogy, is a category of the understanding; but it is at the same time a law of nature, since there is an adaptation of our minds to nature, even though the agreement between them is only schematic.

By far the best parts of the book seem to me to be the discussions of a "fallibilistic" methodology for science and the relativism of standards of logical rigor to cultural milieu. On the other hand, Professor Gonseth's views on formal validity and its foundations are exceedingly naïve. For although the analysis of the historical occasions which stimulate the formulation of logical doctrines is often illuminating, psycho-genetic accounts of doctrines, to which the author almost entirely restricts himself, have little bearing upon the clarification of ideas and none upon their validity. Also, it is about time, I think, that philosophers wishing to find grounds for rejecting the thesis of *Principia Mathematica* would offer better reasons for doing so than the allegation that the well-known antinomies and a need for the axiom of reducibility follow from it. The

"derivation" which Professor Gonseth gives for mathematical and logical theorems from an "intuitive," concrete content is interesting; but while the problem he raises is an important one, and the question what experiences *suggest* these formal laws is eminently worth investigating, I do not think that he has presented any respectable evidence for his thesis that logic and mathematics are species of physics.

E. N.

Die Sogenannten Definitionen durch Abstraktion. Eine Theorie der Definitionem durch Bildung von Gleichheitsverwandtschaften. HEINRICH SCHOLZ und HERMANN SCHWEITZER. (Forschungen zur Logistik und zur Grundlegung der Exakten Wissenschaften, Heft 3.) Leipzig: Felix Meiner. 1935. Pp. v + 108. M. 4.50.

This monograph formulates the precise logical structure of the device used in logistic works to define such "abstracta" as Number, Ratio, Length, etc. These definitions are obtained by means of a so-called "principle of abstraction," though as Russell himself remarked it would be more appropriate to designate it as "the principle which dispenses with abstraction." In the present work a more general method is employed than in *Principia,* and it is shown how the principle may be applied to cases where the relation involved is polyadic of degree *2n.* The technical exposition is preceded by an interesting critical survey of "definitions by abstraction" among the ancients, medievals, and such recent writers as Cantor, Dedekind, and Peano. There is also a valuable appendix on Frege's logical methods.

E. N.

What Can Philosophy Determine? Aristotelian Society Supplementary Volume XV. London: Harrison & Sons, Ltd. 1936. 235 pp. 15 s.

This volume contains a brief restatement by Professor G. F. Stout of his views about universals and particulars, and five symposia, on questions that might seem well selected to encourage debate. The symposium, "Are there synthetic *a priori* truths?" really does start a debate, with Professor Broad criticizing the logical positivists in a way that is humorous, if a bit unfair, and Mr. A. J. D. Porteous offering some corrections to bring out what is, in his opinion, the real issue. The symposium on "Memory Knowledge," though less a debate, brings out clearly the very real difficulties of any epistemological theory about memory. The discussions in the other symposia, on "Sense-data," "Is existence a predicate?" and

"Can philosophy determine what is ethically valuable?" have not so very much of novelty to offer, except in occasional points of detail.

H. T. C.

La poésie et le principe de transcendance. Essai sur la création poétique. MAURICE DUVAL. Paris: Félix Alcan. 1935. 430 pp. 40 fr.

This book is described by Henri Bergson (in a letter quoted by the author) as having "a capital subject, whose probing ought to lead us to the heart itself of psychology and metaphysics" (p. 10).

The book is perplexing, partly because it is not quite made clear *what* the subject is. Fully half of its four hundred pages are a lyric reiteration of poetry as the divine and liberating revelation of truth, and the principle by which humanity transcends itself, releases itself from necessities, fixed forms, and stereotypes, and, by revealing the divine creativeness of which the poet is the spokesman, reinstates creation in social and moral action. Poetry has "*une nature véritable*" (cf. p. 26) which is not to be confused with any specific illustrations of it, and certainly to be distinguished from trivial or surface verbal "play." The *nature véritable* of poetry is its creative expression of truth transcendent making possible human transcendence of physical limitation. Truth speaks through poetry, and poetry makes us free.

Yet in what the author obviously regards as incidental and secondary considerations, he has specific and informative things to say about rhyme and the form of poems (pp. 45–67) and about the "*métier*" of the poet (pp. 130–156). But it is not with rhymes, form, or indeed poems that our author is concerned. He is preoccupied by poetry absolute. Poetry is passion in act, breaking through the petrifying necessities of a "closed society."

> Donc l'être qui, en un point de l'espace et du temps, découle de cet élan créateur, quoique renfermé en lui-même, ne peut jamais se contenter d'être soi. Il faut non seulement qu'il dépasse, en chacune des étapes de son devenir, le progrès réalisé, mais qu'il transcende sa nature, comme s'il le pouvait. Le réel y oppose des obstacles insurmontables. Ce qui est impossible à l'action devient le devoir de la pensée. [P. 204.]

It is easy to recognize why M. Bergson found congenial, not to add familiar, doctrine here. Like much of current French writing on esthetics, this book betrays the influence of Bergson, identifying life with creation and freedom, and finding life and authentic art identical.

But poetry talked about in this strain recalls also the *Ion* where Plato represents poets as speaking better than they know, and God taking away the minds of poets that they might better express his.

This is a work in mystic morality and prophecy, not an *analysis* of poetry or its creation.

I. E.

Recent Outlooks in the Philosophy of Science. J. W. A. HICKSON. Montreal: Privately Printed. 1935. Pp. 39.

This is the expansion of an address before the Physical Society of McGill University, chiefly concerning the philosophy of science of Sir James Jeans. The author is critical of Jeans for his idealism, and especially his indeterminism. The discussion is good, without being especially novel or profound.

H. T. C.

OTHER NEW BOOKS AND JOURNALS

RECHERCHES PHILOSOPHIQUES. Volume V (1935–1936). Fondées par *A. Koyré, H.-Ch. Puech, A. Spaier.* Paris: Boivin & Cie. vi + 548 pp. (MEDITATIONS SUR LE TEMPS—*I. Le problème du temps.* Temps spirituel et temps matériel: *R. Poirier.* La notion du temps: *N. Khersonsky.* Le sens du temps: *R. Ruyer. II. Le temps et la vie.* Le problème du temps vécu: *E. Minkowski.* Temps et agressivité: *P. Klossowsky.* Le mouvement vécu: *E. Straus. III. Le verbe et le temps.* De quelques aspects du temps: *B. Groethuysen.* Temps et idiome: *E. Pichon. IV. Le mythe et l'histoire.* Temps et mythes: *G. Dumézil.* Le mythe et l'homme: *R. Caillois.* Le fait historique: *H. Lévy-Bruhl.* DE L'ÊTRE ET DU SAVOIR. Verité, évidence et certitude: *A. Reymond.* Espirt et matière: *H. J. Jordan.* Autour du problème de Dieu: *X. Zubiri.* DE L'EXISTENCE ET DE L'ETRE. Présence et absence: *J. Nogué.* Le labyrinthe: *G. Bataille.* De l'évasion: *E. Lévinas.* La conciliation hégélienne: *K. Löwith.* COMPTES RENDUS ET REVUES GÉNÉRALES (pp. 405–543) under the following headings: Philosophie Générale; Phénoménologie; Psychologie et Esthétique; Linguistique; Logique et Épistémologie; Sciences Sociales; Histoire de la Philosophie; Varia et Notules.)

THE PHILOSOPHICAL REVIEW. Vol. XLV, 6. The Receptacle: *Raphael Demos.* Aesthetic Imitation and Imitators in Aristotle: *Katherine E. Gilbert.* The Second International Congress for the Unity of Science: *D. Bidney.* The Second International Congress for the Unity of Sciences: *William H. Werkmeister.* Discussion—Personal Realism: *J. W. Buckham.* Some Neglected Alternatives to Pratt's Mind-Body Theory: *J. S. Moore.* The Mind-Body Problem: *Virgil Michel.* The Many-valued Logics: *A. P. Ushenko.*

REVUE DE MÉTAPHYSIQUE ET DE MORALE. 43e Année, No. 4. Ravaisson, Quinet, Schelling. Lettres, avec une introduction et des notes par P.-M. Schuhl. La Psychologie de la croyance et le mysticisme (suite): *P. Janet.* L'astrobiologie et la pensée de l'Asie: Essai sur les origines des sciences et des théories morales (suite): *R. Berthelot.* De Spengler à Toynbee: Quelques philosophies opportunistes de l'histoire: *L. Febvre.* Histoire et politique, à propos d'un livre et d'un débat récents: *G. Aillet.* Maïmonide huit cents ans après sa naissance: *D. Baumgardt.* A propos d'un malentendu: *R. Berthelot.*

NOTES AND NEWS

TO THE EDITORS OF THE JOURNAL:

May I have the privilege of your columns for the following communication?

An effort is being made to collect material for a memoir of the late Professor A. A. Bowman, of Glasgow University.

It is believed that the number of people who could contribute helpful data towards the carrying out of such a proposal is very large, in America as well as Great Britain.

For a number of years before and after the war, Professor Bowman was at Princeton University, and he visited and lectured elsewhere on many occasions. His personality and teaching have left a deep, lasting impression on many students, colleagues, acquaintances and friends. There are many persons who benefited especially by his sympathetic counsel in matters of the greatest importance and who now treasure that counsel, and above all, the generosity with which it was given when sought. These things are now being remembered, and they should not be left as scattered memories of individuals. Such a store of recollections and impressions, as well as the letters written by him, would be of inestimable value for the preparation of the memoir in which all his friends alike will be interested.

Professor J. W. Scott, University College, Cardiff, Wales, is collecting this material. "It is perhaps unnecessary to add," he writes, "that no one responsible for a memoir wishes to know only the serious side, or only the flattering side, of his subject, but to see him as he stood before the world from all angles."

"Needless to say, all contributors of letters, documents, or other data may rely on the greatest care being taken of their property and on its eventual return."

I have been asked by Professor Scott to make this communication

to the many persons in America who would be interested and to invite them to send to my address any material they may have to contribute.

C. W. HENDEL,
McGill University, Montreal, Canada.

Several years ago the Southern Society for Philosophy and Psychology appointed a committee to investigate the teaching of philosophy in the South. A questionnaire was prepared by the Committee and sent to a large number of institutions in the southern states. The response to this, however, proved disappointing and disheartening. In 1932, the Committee sent a new questionnaire to approximately one hundred institutions of collegiate and university rank. Examination of the reports convinced the Committee that it could not fulfill its task without additional information. The questionnaire was therefore revised with the addition of certain other questions. In this revised and extended form the questionnaire was again sent to nearly one hundred southern colleges and universities, early in the spring of 1934.

The Committee was again disappointed, because of the failure of many institutions to coöperate. Replies were received from only about one-third of the institutions from which the Committee had sought to obtain information. An examination of the tables prepared on the basis of the information received suggests that, on the whole, the larger institutions have been more ready to supply information than the smaller ones. There were, however, notable exceptions to this statement.

The Committee came to the conclusion that the difficulties it had encountered, and its failure to receive a full measure of coöperation, constituted a symptom of conditions, and despite the paucity of returns, it resolved to prepare a report. In the light of its total experience, the Committee believes that the status of philosophy teaching in the South is depressingly low. At the 1935 meeting of the Society in Nashville, a tentative draft of a report was presented to the Council of the Society, which authorized the preparation of a final draft. The Council further authorized the mimeographing of the report, provided that it was approved by a majority of members of the Council, to whom the report should be submitted individually by mail.

Readers who may be interested in studying this Report are referred to Professor Herbert Sanborn, Vanderbilt University, Nashville, Tennessee, Chairman of the Committee.